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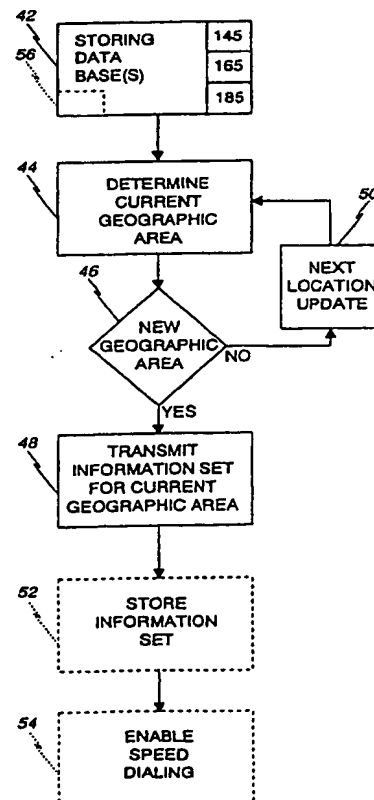
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(54) Title: MOBILE TELEPHONE COMMUNICATION SYSTEM AND METHOD FOR TRANSMITTING INFORMATION ASSOCIATED WITH A GEOGRAPHIC AREA TO A SUBSCRIBER

(57) Abstract

A method and apparatus are provided for communicating information for use by a subscriber in a mobile telephone communication system including mobile stations that are operable in a plurality of identifiable, distinct geographic areas. The method includes the steps of storing a data base containing a plurality of information sets, each information set corresponding to one of the distinct geographic areas and containing information associated with the distinct geographic area that is of potential interest to a subscriber located in the geographic area; determining a current distinct geographic area in which a mobile station is located; and transmitting the information set corresponding to the current distinct geographic area from the data base to the mobile station. The mobile telephone communication system includes a memory device containing the data base, and a transmitter operably associated with the memory device to transmit the information sets to a mobile station located in one of the plurality of distinct geographic areas.



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MOBILE TELEPHONE COMMUNICATION SYSTEM
AND METHOD FOR TRANSMITTING INFORMATION
ASSOCIATED WITH A GEOGRAPHIC AREA TO A SUBSCRIBER

FIELD OF THE INVENTION

5 This invention relates to communication systems and more specifically to mobile telephone communication systems including mobile stations that are operable in a plurality of identifiable, distinct geographic areas.

BACKGROUND OF THE INVENTION

10 The coverage areas for mobile telephone communication systems are constantly expanding. It is now common for a single mobile station to be operable in a plurality of identifiable, distinct geographic areas so that a subscriber may use the mobile station as he travels from one distinct geographic area to another, such as traveling from city to city, state to state, and/or country to country. During such travels, there may be information associated with each distinct geographic area that
15 is of potential interest to a subscriber. For example, the methodology for making certain telephone calls, such as emergency calls, long distance calls, etc., may change from one geographic area to another. By way of further example, there may be a travel advisory or a weather bulletin associated with a particular geographic area that would be of interest to a subscriber if the subscriber is located in the
20 particular geographic areas. As yet another example, there may be a number of important telephone numbers associated with each geographic area that is of interest to a subscriber. For example, the telephone numbers of the Embassy, local hospitals, local Red Cross, local taxi services, local police, local business office, local business numbers, local business and personal contacts, etc. associated with a
25 distinct geographic area may all be of interest to a subscriber located in the distinct geographic area. Currently, it is typical for subscribers to obtain such information either by using local directories and assistance, or by anticipating the geographic areas in which the subscriber will travel and carrying the information with the

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subscriber as the subscriber travels from one geographic area to another. However, subscribers cannot always anticipate the geographic areas to which they will travel, and locating and using local directories and assistance can take up valuable time.

SUMMARY OF THE INVENTION

5 In accordance with the present invention, a method is provided for communicating information for use by a subscriber in a terrestrial and/or satellite mobile telephone communication system including mobile stations that are operable in a plurality of identifiable, distinct geographic areas. The method includes the steps of storing a data base containing a plurality of information sets, each
10 information set corresponding to one of the distinct geographic areas and containing information associated with the distinct geographic area that is of potential interest to a subscriber located in the geographic area; determining a current distinct geographic area in which a mobile station is located; and transmitting the information set corresponding to the current distinct geographic area from the data base to the
15 mobile station.

 In one form, each of the information sets contain telephone numbers associated with one of the distinct geographic areas.

 In one form, the method further comprises the step of storing the telephone numbers in a memory device of the mobile station for future recall and
20 use by a subscriber using the mobile station after the transmitting step.

 In one form, the method further includes the step of enabling a speed dialing function in the mobile station for at least some of the telephone numbers.

 In one form, the storing step comprises storing at least some of the information in the data base in the form of voice messages that can be transmitted
25 to a mobile station and conveyed to a subscriber through a speaker associated with the mobile station.

 In one form, the storing step comprises storing at least some of the information in the data base in the form of text messages that can be transmitted to

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a mobile station and conveyed to a subscriber through a display associated with the mobile station.

5 In one form, the method further includes the step of comparing the current distinct geographic area with a last known distinct geographic area in which the mobile station was located. The transmitting step includes the step of transmitting the information set corresponding to the current distinct geographic area from the data base to the mobile station only if the current distinct geographic area is different than the last known distinct geographic area.

10 In one form, the method further includes the step of storing a time data base of acceptable transmission times for the mobile station. The transmitting step includes the step of accessing the time data base for the acceptable transmission times for the mobile station and transmitting the information set corresponding to the current geographic area from the data base to the mobile station at one of the acceptable transmission times for the mobile station.

15 In accordance with the present invention, a mobile telephone communication system is provided for transmitting useful information to a mobile station for use by a subscriber located in any of a plurality of identifiable, distinct geographic areas. The communication system includes a memory device containing a data base including a plurality of information sets corresponding to the plurality of distinct geographic areas, each information set corresponding to one of the distinct geographic areas and containing information associated with the distinct geographic area that is of potential interest to a subscriber located in the distinct geographic area. The communication system further includes a transmitter operably associated with the memory device to transmit the information sets to a mobile station located
20 in one of the plurality of distinct geographic areas.

25 In one form, the communication system further includes a memory device in a mobile station to store the transmitted information sets for future recall and use by a subscriber using the mobile station.

30 In accordance with the present invention, a mobile station is provided for use by a subscriber located in any of a plurality of identifiable, distinct geographic

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areas serviced by a mobile telephone communication system. The mobile station includes a transmitter, a receiver, a memory device, and control circuitry. The receiver is adapted to receive transmissions of any of a plurality of information sets corresponding to the plurality of distinct geographic areas, each information set
5 corresponding to one of the distinct geographic areas and containing information associated with the distinct geographic area that is of potential interest to a subscriber located in a geographic area. The control circuitry is configured to store in the memory device a most recent one of the information sets received by the receiver for future recall and use by a subscriber.

10 In one form, the mobile station further includes speed dialing circuitry. Each of the information sets contain telephone numbers associated with one of the distinct geographic areas. The control circuitry is configured to enable the speed dialing circuitry for speed dialing of the telephone numbers of the most recent one of the information sets received by the receiver for future recall and use by a
15 subscriber.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagrammatic representation of a communication system embodying the present invention;

20 Fig. 2 is a diagrammatic representation of a mobile station for use in the invention; and

Fig. 3 is a flow chart illustrating a method embodying the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

25 As seen in Fig. 1, the invention is embodied in a terrestrial and/or satellite mobile telephone communication system 10 including mobile stations 12 that are operable in a plurality of identifiable, distinct geographic areas 14, 16, and 18, such as villages, towns, townships, cities, counties, states, regions, countries, and continents. The communication system 10 includes one or more switching

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system(s) 20, one or more memory device(s) 22 that are operably associated with the switching system(s) 20, one or more transmitter(s) 24 and receiver(s) 25 that are operably associated with the switching system(s) 20 and memory device(s) 22 and capable of transmitting signals to any of the mobile stations 12 located in the geographic areas 14, 16, 18, and one or more control system(s) 26 that are operably associated with the switching system(s) 20, memory device(s) 22, transmitter(s) 24 and receiver(s) 25 to control the communication system 10. The switching system(s) 20, the memory device(s) 22, the transmitter(s) 24, the receiver(s) 25 and control system(s) 26 may be located within or remote from any or all of the geographic areas 14, 16, 18.

According to the invention, the communication system 10 is configured to provide a subscriber traveling between the geographic areas 14, 16, 18 with information associated with each of the geographic areas 14, 16, 18 that is of potential interest to the subscriber when the subscriber is located in one of the geographic areas 14, 16, 18. For example, the communication system 10 is configured so that when a subscriber travels from the geographic area 14 to the geographic area 16, the communication system 10 will provide the subscriber with information associated with the geographic area 16 that is of potential interest to the subscriber while the subscriber is located in the geographic area 16.

It should be understood that while only three distinct geographic areas 14, 16, and 18 are illustrated for the purpose of describing the invention, the invention contemplates anywhere from two geographic areas to as many geographic areas as may be required to service the coverage area for the communication system 10.

Many types of mobile station(s) 12, switching system(s) 20, memory device(s) 22, transmitter(s) 24, receiver(s) 25, and control system(s) 26 are well known and may be utilized to practice the invention with little or no modification other than to the control scheme implemented by the control system(s) 26. Accordingly, more detailed descriptions of the mobile station(s) 12, switching system(s) 20, memory device(s) 22, transmitter(s) 24, and control system(s) 26 is not required

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herein. It should be understood that while the switching system(s) 20, memory device(s) 22, transmitter(s) 24, receiver(s) 25, and control system(s) 26 are illustrated in Fig. 1 by separate blocks, these components 20, 22, 24, and 26 may be selectively integrated with each other, or may exist separately from each other.

5 For example, one or more of the memory device(s) 22 may be integrated with one or more of the control system(s) 26. By way of further example, one or more of the control system(s) 26 may be integrated with one or more of the switching system(s) 20. As yet another example, one or more of the switching system(s) 20 may be integrated with one or more of the transmitter(s) 24. Again, because such
10 integration is well known, a more detailed description is not required herein.

One example of a mobile station 12 for use in the invention is shown in Fig. 2. The mobile station 12 includes a transmitter/receiver 30; input-output devices 32, including a speaker 34 and a visual display 35; control circuitry 36; memory 38; and speed dialing circuitry 40. Many types of transmitters/receivers
15 (30), input-output devices 32, speakers 34, control circuitry 36, memory 38, and speed dialing circuitry 40 for use in mobile stations 12 are well known and may be utilized to practice the invention with little or no modification. Accordingly, more detailed descriptions of these components is not required herein. Further, it should be understood that some of the components, such as the speaker 34, speed dialing
20 circuitry 38 and memory 40, are not necessarily required for all embodiments of the invention.

With reference to Fig. 3, to practice the invention, a data base containing the plurality of information sets (145, 165, 185) is stored in the memory device(s) 22 as shown at block 42. Each information set 145, 165, 185 corresponds
25 to one of the distinct geographic areas 14, 16, 18 and contains information associated with the distinct geographic area 14, 16, 18 that is of potential interest to a subscriber located in the geographic area 14, 16, 18. Examples of such information were discussed more fully in the Background of the Invention section of this application, and include, for example, the methodology of making certain
30 telephone calls, such as emergency calls and long distance calls; travel advisories;

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weather reports or bulletins; and important telephone numbers, such as the Embassy, local hospitals, local Red Cross, local taxi services, local police, local business office, local business numbers, and local business and personal contacts associated with the distinct geographic area.

5 As shown at block 44, the control system(s) 26 is configured to determine a current geographic area in which a mobile station 12 is located. The communication system may perform this step for a plurality of mobile stations 12 to determine the current distinct geographic area 14, 16, 18, for each of the plurality of mobile stations 12. Typically, this step will be performed whenever a location update
10 is initiated for one of the mobile stations 12. In most current communication systems, a location update is initiated whenever a mobile station 12 is powered on and whenever a mobile station 12 moves from one geographic area 14, 16, 18 to another geographic area 14, 16, 18 while the mobile station is powered on. In this regard, the communication system 10 may utilize the receiver(s) (25) to perform the
15 location update by receiving a signal from the one mobile station 12. Alternatively, the location update may be performed by utilizing global positioning technology, many forms of which are well known and need not be described in more detail herein.

 Preferably, as shown at block 46, the control system(s) 26 is
20 configured to compare the current geographic area, as determined by the most recent location update, with the last known geographic area in which the one mobile station 12 was located, which will be the current geographic area determined from the location update that immediately preceded the most recent location update. As shown at block 48, if the current geographic area is different than the last known
25 geographic area, the control system(s) 26 is configured to transmit the information set corresponding to the current geographic area from the memory device(s) 22, through the switching system(s) 20 and transmitter(s) 24 to the one mobile station 12. As shown at block 50, if the current geographic area is the same as the previous geographic area, the system 10 repeats the determining step after the next location
30 update, without transmitting the information set. It should be understood that

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according to some alternate embodiments in the invention, the steps illustrated by blocks 46 and 50 are eliminated so that the transmitting step illustrated by block 48 occurs every time the determining step illustrated by block 44 is performed.

According to one or more embodiments of the invention, each of the
5 information sets 145, 165, 185 contain telephone numbers associated with the distinct geographic area 14, 16, 18 corresponding to the information set 145, 165, 185. After the transmitting step illustrated by block 48, the telephone numbers are stored in the memory 38 of the mobile station 12, as shown at block 52, and the speed dialing circuitry 40 is enabled for at least some of the telephone numbers by
10 the controller 36 of the mobile station 12, as shown at block 54. In some embodiments, the telephone numbers stored in memory 38 overwrite the telephone numbers previously stored in memory 38 for speed dialing associated with the geographic areas 14, 16, 18. Thus, for example, a mobile station 12 could be configured so that the speed dial No. 1 always dials a local taxicab company, the
15 speed dial No. 2 always dials the local U.S. Embassy, and the speed dial No. 3 always dials the local business office of the geographic area 14, 16, 18 in which the mobile station 12 is currently located. This allows a subscriber to access such important telephone numbers without anticipating the geographic areas to which the subscriber will travel, and without taking the time to locate and utilize local directories
20 and assistance.

According to one or more embodiments of the invention, the storing step illustrated by block 42 includes the step of storing at least some of the information in the data base in the form of voice and/or text messages that can be transmitted to one of the mobile stations and conveyed to a subscriber through the
25 speaker 34 and/or visual display 35 of the mobile station 12. For example, for these embodiments, a subscriber arriving in the geographic area 16 could receive a travel advisory warning the subscriber of various potential dangers associated with the geographic area, and/or providing the subscriber with a current weather forecast for the geographic area 16 or warnings of impending severe weather for the geographic
30 area 16. The technologies required for storing and transmitting voice and/or text

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messages are well known and need not be described further herein. For example, short-message service technology is well known for transmitting alphanumeric text messages.

According to one or more embodiments of the invention, the
5 alphanumeric storing step illustrated by block 42 includes the step of storing a time
data base 56 of acceptable transmission times for one or more of the mobile stations
12. The transmitting step illustrated by block 50 includes the step of accessing the
time data base 56 for the acceptable transmission times for the mobile station 12
and transmitting the information set 145, 165, 185 corresponding to the current
10 geographic area 14, 16, 18 at one of the acceptable transmission times for the
mobile station 12. This feature is primarily useful with the embodiments which
include information in the data base in the form of voice messages. For example,
the time data base may include acceptable transmission times of 9:00 a.m. until 6:00
p.m. for one of the mobile stations 12 so that the subscriber each avoid receiving the
15 transmission of a voice message information set during the evening and early
morning hours.

The foregoing disclosure of specific embodiments is intended to be illustrative of the broad concepts comprehended by the invention.

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CLAIMS

1. Method of communicating information for use by a subscriber in a mobile telephone communication system including mobile stations that are operable in a plurality of identifiable, distinct geographic areas, the method comprising the steps of:

5 storing a data base containing a plurality of information sets, each information set corresponding to one of the distinct geographic areas and containing information associated with the distinct geographic area that is of potential interest to a subscriber located in the distinct geographic area;

10 determining a current distinct geographic area in which a mobile station is located; and

transmitting the information set corresponding to the current distinct geographic area from the data base to the mobile station.

2. The method of claim 1 wherein each of the information sets contain telephone numbers associated with one of the distinct geographic areas.

3. The method of claim 2 further comprising the step of storing the telephone numbers in a memory device of the mobile station for future recall and use by a subscriber using the mobile station after the transmitting step.

4. The method of claim 3 further comprising the step of enabling a speed dialing function in the mobile station for at least some of the telephone numbers.

5. The method of claim 1 wherein the storing step comprises storing at least some of the information in the data base in the form of voice messages that can be transmitted to a mobile station and conveyed to a subscriber through a speaker associated with the mobile station.

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6. The method of claim 1 wherein the storing step comprises storing at least some of the information in the data base in the form of text messages that can be transmitted to a mobile station and conveyed to a subscriber through a display associated with the mobile station.

7. The method of claim 1 further comprising the step of comparing the current distinct geographic area with a last known distinct geographic area in which the mobile station was located, and wherein the transmitting step comprises the step of transmitting the information set corresponding to the current distinct geographic area from the data base to the mobile station only if the current distinct geographic area is different than the last known distinct geographic area.

8. The method of claim 1 further comprising the step of storing a time data base of acceptable transmission times for the mobile station, and wherein the transmitting step comprises the step of accessing the time data base for the acceptable transmission times for the mobile station and transmitting the information set corresponding to the current geographic area from the data base to the mobile station at one of the acceptable transmission times for the mobile station.

9. A mobile telephone communication system for transmitting useful information to a mobile station for use by a subscriber located in any of a plurality of identifiable, distinct geographic areas, the communication system comprising:

a memory device containing a data base including a plurality of information sets corresponding to the plurality of distinct geographic areas, each information set corresponding to one of the distinct geographic areas and containing information associated with the distinct geographic area that is of potential interest to a subscriber located in the geographic area;

a transmitter operably associated with the memory device to transmit the information sets to a mobile station located in one of the plurality of distinct geographic areas.

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10. The communication system of claim 9 further comprising a memory device in a mobile station to store the transmitted information sets for future recall and use by a subscriber using the mobile station.

11. A mobile station for use by a subscriber located in any of a plurality of identifiable, distinct geographic areas serviced by a mobile telephone communication system, the mobile station comprising:

a transmitter;

5 a receiver to receive transmissions of any of a plurality of information sets corresponding to the plurality of distinct geographic areas, each information set corresponding to one of the distinct geographic areas and containing information associated with the distinct geographic area that is of potential interest to a subscriber located in the geographic area;

10 a memory device; and

control circuitry to store in the memory device a most recent one of the information sets received by the receiver for future recall and use by a subscriber.

12. The mobile station of claim 11 further comprising speed dialing circuitry; and wherein each of the information sets contain telephone numbers associated with one of the distinct geographic areas, and the control circuitry is configured to enable the speed dialing circuitry for speed dialing of the telephone
5 numbers of the most recent one of the information sets received by the receiver for future recall and use by a subscriber.

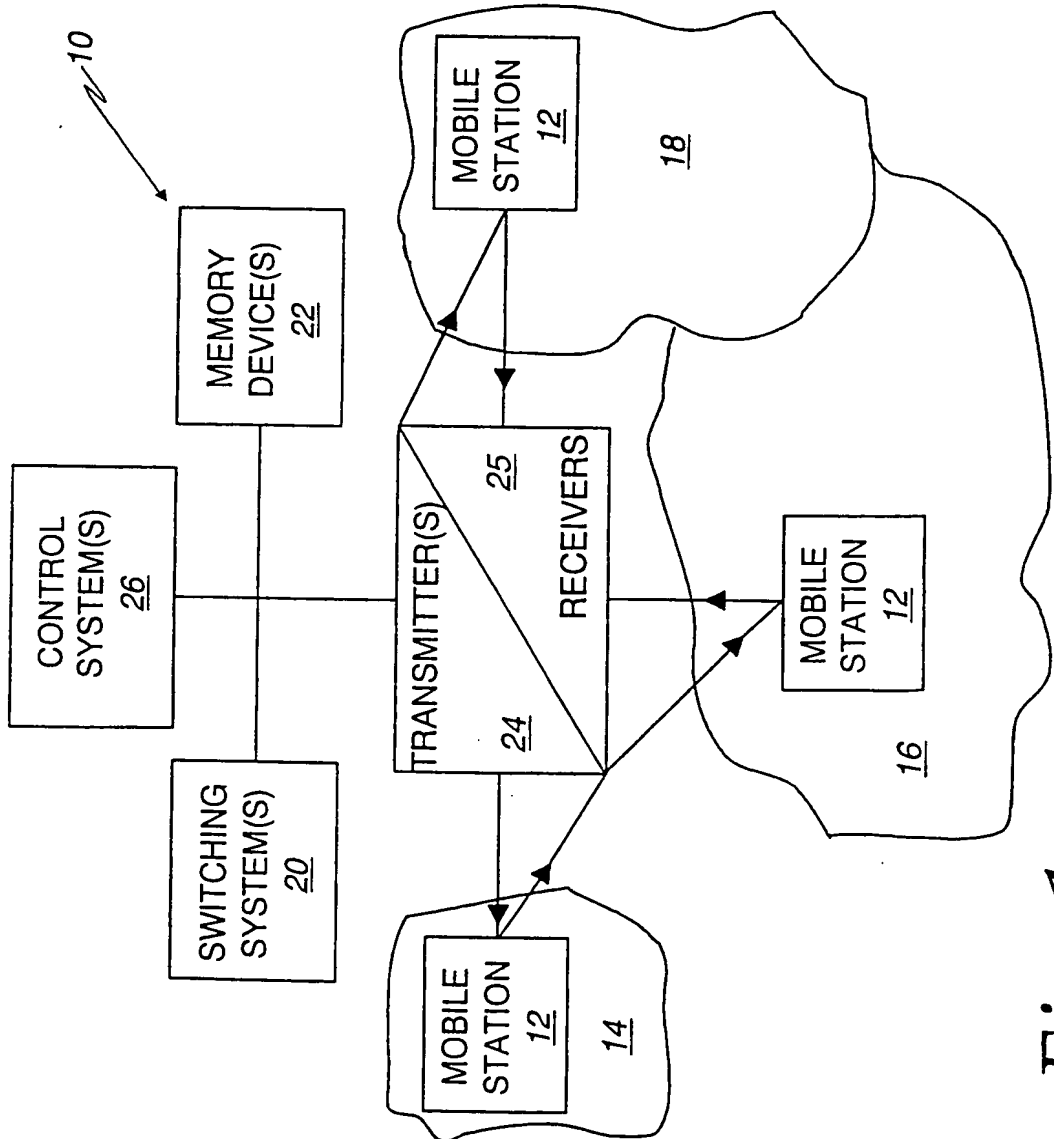
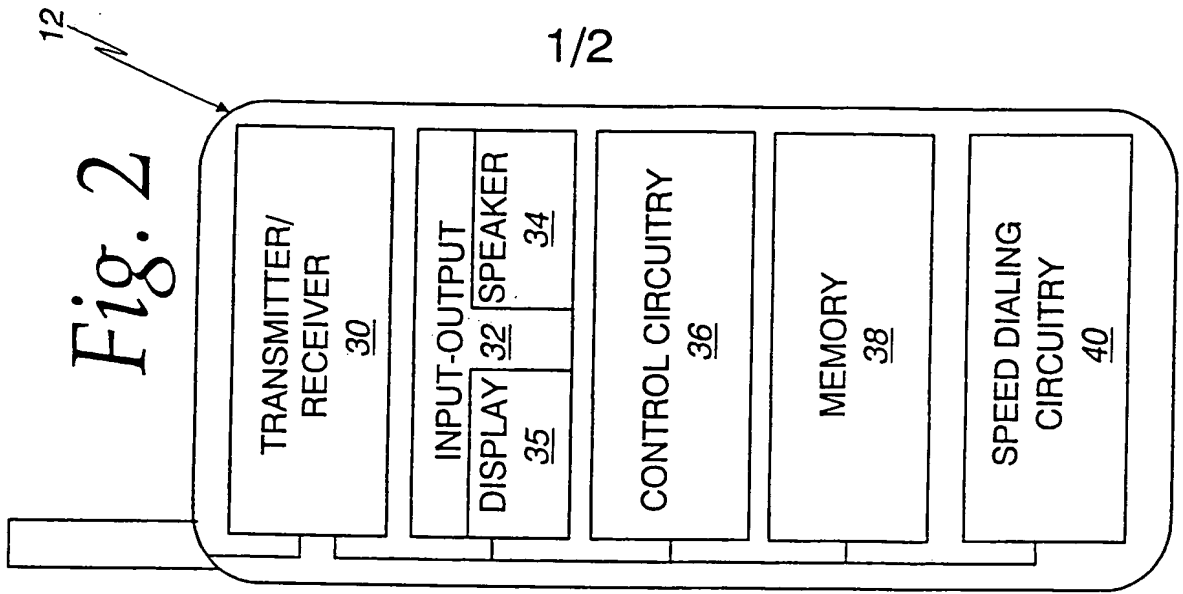
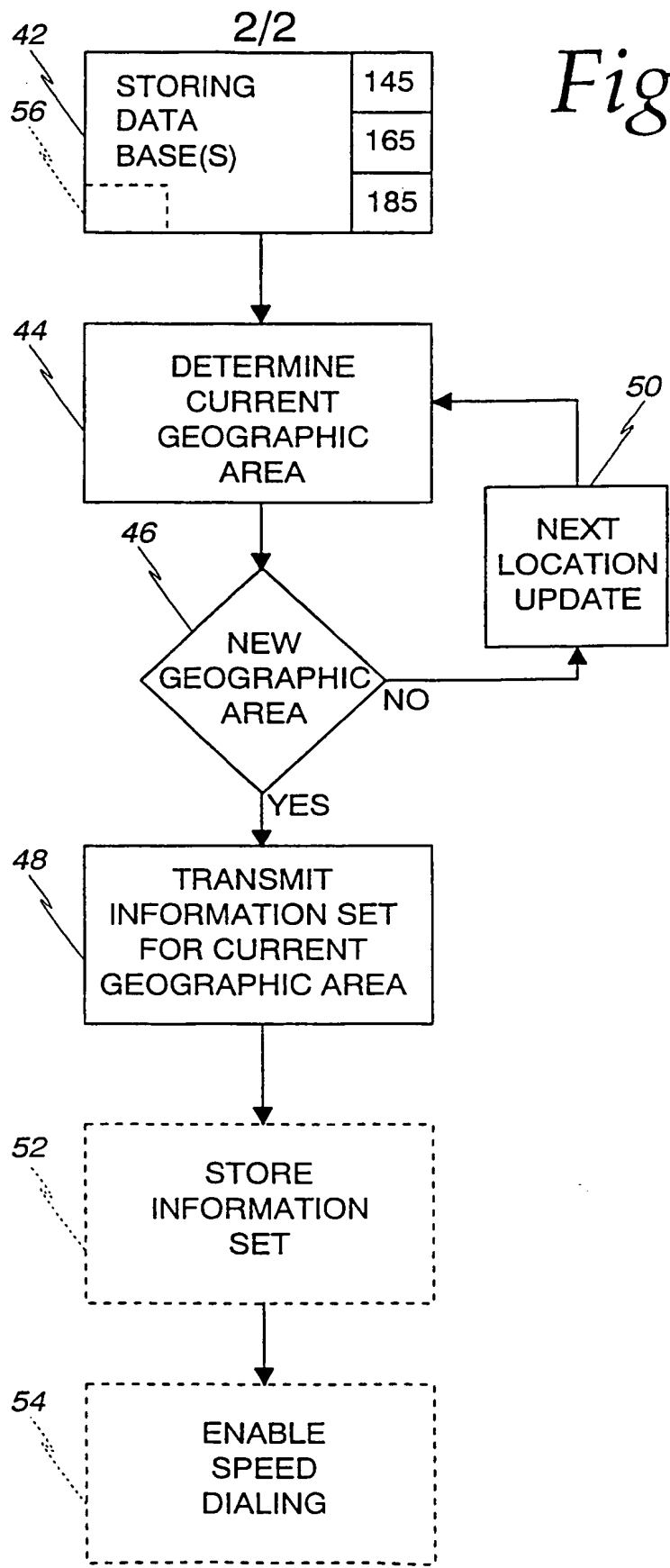


Fig. 3



INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/15132

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H0407/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04Q H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 800 320 A (LUCENT TECHNOLOGIES INC) 8 October 1997 (1997-10-08) column 3, line 47 -column 6, line 53 ---	1,2,5,6, 9-11
X	WO 97 41654 A (MCLORINAN ANDREW GEORGE ;TSOUKAS GEORGE JAMES (AU); ERICSSON TELEF) 6 November 1997 (1997-11-06) page 2, line 30 -page 3, line 12 page 6, line 18 - line 30 page 7, line 26 -page 11, line 5 ---	1,2,6, 8-11
X	WO 98 21913 A (ERICSSON GE MOBILE INC) 22 May 1998 (1998-05-22) page 2, line 36 -page 5, line 36 ---	1,2,6, 9-11
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

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PCT/US 99/15132

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 797 368 A (SONY CORP) 24 September 1997 (1997-09-24) column 1, line 40 -column 2, line 11 column 3, line 35 -column 11, line 14 ---	1,9,11
A	WO 93 01665 A (MOTOROLA INC) 21 January 1993 (1993-01-21) page 12, line 13 -page 20, line 15 -----	1,9,11

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 99/15132

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0800320 A	08-10-1997	AU 1664697 A CA 2199879 A JP 10051859 A	09-10-1997 05-10-1997 20-02-1998
WO 9741654 A	06-11-1997	AU 2375097 A EP 0864211 A	19-11-1997 16-09-1998
WO 9821913 A	22-05-1998	US 5930699 A AU 5105898 A EP 0940055 A	27-07-1999 03-06-1998 08-09-1999
EP 0797368 A	24-09-1997	JP 9261169 A	03-10-1997
WO 9301665 A	21-01-1993	CA 2112594 A EP 0592493 A JP 6508970 T US 5579535 A	21-01-1993 20-04-1994 06-10-1994 26-11-1996